



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/899,183	07/06/2001	Shigeru Matsuno	401278	3158
23548	7590	06/02/2005	EXAMINER	
LEYDIG VOIT & MAYER, LTD			BUEKER, RICHARD R	
700 THIRTEENTH ST. NW			ART UNIT	PAPER NUMBER
SUITE 300			1763	
WASHINGTON, DC 20005-3960				

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/899,183	MATSUNO ET AL.
	Examiner	Art Unit
	Richard Bueker	1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 15-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 15-18 is/are rejected.
- 7) Claim(s) \_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. ____.
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: ____.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (5,835,678) taken in view of Zhao (6,210,485). Li (Fig. 1) discloses a CVD apparatus having a CVD reaction chamber connected to a vaporizer for vaporizing CVD source materials. The vaporizer (Fig. 2) includes a heated chamber having an inlet and a heat conductive chamber wall that houses the baffles 52, 54 and 56. A spray nozzle 24 is located to spray CVD precursor source materials into the chamber through the inlet, and a plate contacting and locating the tip end of the nozzle (see the baffle plate for distributing inert gas illustrated in Fig. 2 but unlabeled). It is noted that "locate" is defined as "to determine or indicate the place, site or limits of", and the plate of Li indicates the place, site or limits of the nozzle. Cooling jacket 26 is a cooling block that is provided for cooling the nozzle (see col. 8, lines 14-17). Li (5,835,678) (see Figs. 4, 5A and 5B and col. 12, line 1 to col. 13, line 4) makes clear that the cooling block is intended to be in physical contact with the nozzle. In view of Li's (5,835,678) description of his Figs. 4, 5A and 5B, it would have been inherent or at least obvious that the cooling block of Fig. 2 was in physical contact with the nozzle of Fig. 2. Fig. 2 of Li also illustrates a middle portion (where thermocouple 32 is located) that is positioned between and connects the lower heated portion of Li's vaporizer with the cooled upper portion of the vaporizer. Li does not disclose the middle portion as

designed or intended to act as a heat conduction restricting region, and in view of the schematic nature of patent drawings it is not clear from Li's Fig. 2 that the middle portion is a heat conduction restricting region. Zhao (Figs. 4 and 5) also discloses a vaporizer having a lower heated vaporization chamber and an upper cooled liquid delivery section. Zhao teaches (col. 7, lines 34-45, and col. 9, lines 29-35) that a middle "neck" portion located between and connecting the heated lower portion and cooled upper portion should be narrow to act as a heat conduction restricting region. Both the neck and the space around the neck act as a heat conduction restricting region. In view of the teachings of Zhao, it would have been obvious to one skilled in the art to intentionally design the middle portion of Li's vaporizer to be narrow enough to act as a heat conduction restricting region.

Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (5,835,678) taken in view of Zhao and Onabe (JP 09-143738). Li (5,835,678) discloses the use of an ultrasonic nozzle to spray his liquid material to be vaporized, and he does not discuss the use of a nozzle having first and second coaxial tubes as claimed in claims 14, 16 and 18. Onabe (Figs. 1 and 2), however, teaches that a source material can be atomized and sprayed by a nozzle having first and second coaxial tubes. Also, Zhao teaches the use of two coaxial tubes for spraying a source material. It would have been obvious to one skilled in the art to modify the apparatus of Li (5,835,678) by substituting a spray nozzle having first and second coaxial tubes of the type taught by Zhao and Onabe for the ultrasonic spray nozzle of Li because they

teach that such a coaxial spray nozzle is an alternate and successful way of spraying source materials into a vaporizer.

Applicants have argued that:

"Li does not include any element that corresponds to the metallic block 18 that is in contact with the nozzle to provide a cooling effect and thereby maintain more stable the temperature of the nozzle. Rather, the nozzle 24 shown in Figure 2 of Li, to which the Examiner directed attention, is surrounded by a gas-filled chamber. Therefore, heat flow to and from the nozzle 24 can only occur by radiation and convection. By contrast, the cooling block provides more efficient heat transfer by conduction."

It is noted, however, that at col. 12, line 1 to col. 13, line 4 of Li, in his description of Figs. 4, 5A and 5B, Li describes nozzle 24' (see Figs. 4 and 5B) and nozzle 24" (see Fig. 5A), and it can be seen in Figs. 4, 5A and 5B that nozzles 24' and 24" are in physical contact with the cooling blocks labeled 25' and 25", as required by the claims as written.

Applicants' amendment filed February 3, 2005 adds the limitation of "a cooling block in physical contact with a portion of the spray nozzle adjacent the plate". It is noted, however, that the dictionary definition of "adjacent" is 'not far' (see copy of definition attached to this action), and Figs. 4, 5A and 5B0 of Li show the cooling block (25' or 25") as being in physical contact with a portion of the nozzle (24' or 24") that is "not far' from the plate of Li. Also, the dictionary definition of "portion" is "a part of any whole, either separated from or integrated with it" (see attached definition). Therefore, the exact meaning of the added limitation depends on which part of the nozzle is designated as the "portion". With Li's nozzle, the "portion" adjacent the plate can be defined as also including the part in physical contact with the cooling block.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parvis Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Richard Bueker*  
Richard Bueker  
Primary Examiner  
Art Unit 1763